Adaptive developmental assessment of young children with cognitive and/or functional impairments

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Adaptive developmental assessment of young children with special needs

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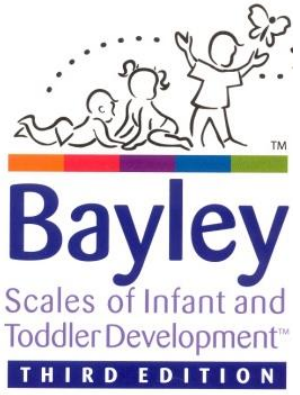
December 2009 – December 2013

ISEI Third Conference
May 2 – 5, 2011, New York



ZonMw

Overview

- Introduction
  - Research project
- Limitations in early assessment
- Criteria
- Bayley-III project: Special Needs Addition
  - Target group
  - Low motor / Low vision
  - Low verbal
  - Dynamic
- Pilot results and results
- Main research
- Conclusion
- References & Acknowledgements

Introduction

- Research Project
  - BSID-II
    - Dutch version
    - Pilot research
      - Low Motor
      - Low Vision
      - Non Verbal
  - Bayley-III
    - Special Needs Addition
    - Funding ZonMw and Pearson

Limitations in Early Assessment

- Low reliability in low range of distribution
- Reliance on language and motor skills
- Limited useful information for intervention plan (e.g. developmental potential)
- Duration (90 minutes)

Criteria

- Reliable for all levels of developmental functioning
- Minimum reliance on language or motor skills or vision
- Gain information about developmental potential
- Gain information for intervention planning
- Test duration: short or adaptable
- Standardized

Bayley-III project: Special Needs Addition (SNA)

- Reliable for all levels of developmental functioning
  - SNA: Trichotomous scoring (0 – ½ - 1)
- Minimum reliance on language or motor skills or vision
  - SNA: Low motor / low vision & Low verbal version
- Gain information about developmental potential
  - SNA: Dynamic version
- Gain information for intervention planning
  - SNA: Dynamic version
- Test duration: short or adaptable
  - SNA: Adaptive testing procedure
- Standardized

Target group

- Target group: children in The Netherlands with
  - a cognitive impairment and / or
  - a motor, visual, speech / language, or hearing impairment
  - developmental age ≤ 42 months
  - calendar age ≤ 10 years

- Children are put forward by > 20 organizations for children with special needs in The Netherlands

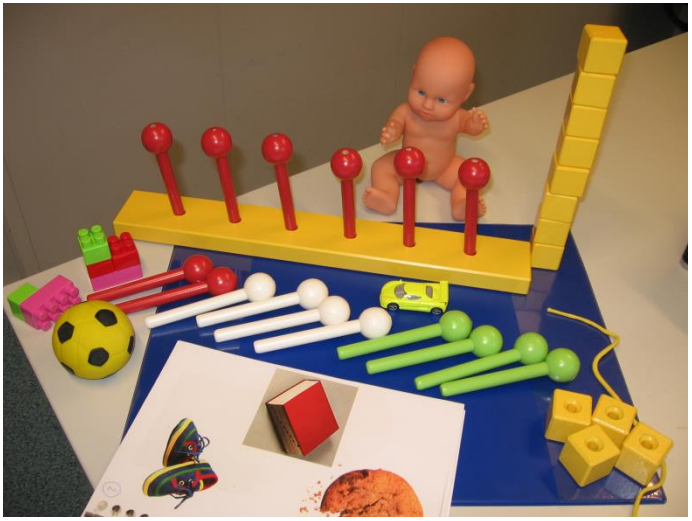
Low motor / Low vision

Adjustments:

- Materials
- Procedures (e.g. Time limits removed)
- Instructions (e.g. Adjust distance of materials from child)

Fragment: Item 55 Cognition (peg board), Standard

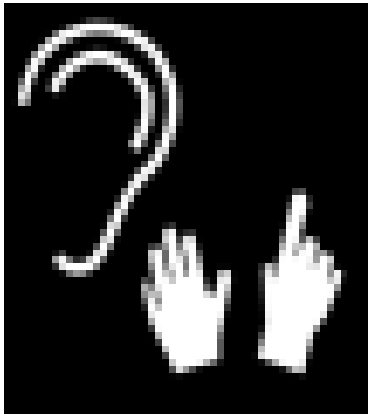
Fragment: Item 55 Cognition (peg board), Low motor / vision



Low verbal

Adjustments:

- Cognition scale
- Instructions (gestures added)
- Target group: children with speech / language problems or hearing impairment
- Not suitable for deaf children



Dynamic version

- Gain information about developmental potential
- Pretest- Intervention – Posttest
- Intervention:
  - Repeat procedure
  - Verbal explanation
  - Demonstration
  - Joint execution (hand-over-hand)

Fragment: Item 82 (object assembly, dog) pretest

Item 80 (discriminates sizes) pretest + training

Fragment: Item 80, posttest

Fragment: Item 89 (understands concept of more) pretest + training

Fragment: Item 89, posttest

Pilot research

- N = 15 per version, tested twice (standard & SNA)
- Quantitative research: study differences between standard / SNA results
  - Total score
  - On item level
- Qualitative research
  - Evaluation form completed by test administrator
  - Expert interviews

Pilot results

- Non-verbal → Low verbal
- Not possible to test low verbal children with standard version
- Low verbal version
  - Limited applicability for deaf children
  - Suitable for children with speech / language problems
- Clear advantage of low motor / low vision adaptations
- Pilot results of all three versions were reason for final adjustments in the manual and scoring form

Main research

- Research questions:
  - Do children with special needs benefit from the adjustments made?
  - Does item difficulty remain unchanged?
  - Is it possible to develop an adaptive testing procedure?
  - Does trichotomous scoring improve reliability?

- Sample size
  - n = 100 low motor / low vision (tested twice)
  - n = 50 low motor / low vision controls (tested twice)
  - n = 50 low verbal
  - n = 85 dynamic version
  - n = 420 standard version

- Published by Pearson in 2014

Conclusion

- There is a clear need for a developmental assessment instrument for children with special needs.

- The Bayley-III-NL-SNA is a promising solution to existing problems. The research in the upcoming years will show whether or not it is a useful instrument.

References & Acknowledgments

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› Thanks to: all participating children & families, organizations, thesis students and testers!